# DVS 304

## FOUR INPUT VIDEO AND RGB SCALER

- Scales video and RGB input sources:
  - S-video & composite video
  - Component video
  - HDTV
  - RGBHV, RGBS, RGsB
- 3:2 (NTSC) and 2:2 (PAL) pulldown detection
- Automatic Input Format Detection
- RGB or component video output
- 59 scaled output rates, including HDTV and UXGA (1600 x 1200)
- IP Link® technology
- On-screen display
- Picture-in-picture

The DVS 304 is a digital video scaler that provides high performance scaling of a wide variety of input sources, including RGB computer-video, HDTV, and standard definition video. The DVS 304 is ideally suited for today's A/V presentations using the latest projectors or flat panel monitors, as well as centralized system integration with high quality source switching, automatic input format detection, and other capabilities.

# *DESCRIPTION*

The Extron **DVS 304** is a Digital Video Scaler incorporating the latest scaling technology from Extron as well as a host of flexible, convenient, integrator-friendly features. This high performance scaler is designed to satisfy the requirements of today's high quality, high resolution video presentations using the latest displays, and at the same time facilitate the process of system integration. The DVS 304 is ideal for a wide range of A/V environments including boardrooms, conference rooms, educational institutions, houses of worship, home theaters, and event and staging applications.

**High Performance RGB and Video Scaling**
The DVS 304 features a high performance scaling engine with the capability to scale standard definition video, high definition video, and computer-video signals up and/or down in resolution. With the DVS 304, only a single RGBHV connection to the display is required, resulting in cost savings due to reduced installation time, cabling, and system programming. The DVS 304 also delivers glitch-free switching between video and computer-video sources. Offering the capability to process both conventional video and high resolution multimedia sources, the DVS 304 creates a single, optimally scaled output to match the native resolution of the display.

**Variety of Input Formats**
The four inputs of the DVS 304 accommodate composite video, S-video, component video, and RGB. SDI (Serial Digital Interface) input is available as an option. The fourth input is flexible and fully configurable to accept any available analog video format from composite video to RGBHV. Additionally, with the exclusive Automatic Input Format Detection mode, the DVS 304 automatically detects and then processes the incoming signal format to this input. This powerful feature is particularly effective in simplifying system integration and operation when using a matrix switcher with the DVS 304.

**Multiple Control Options**
The DVS 304 can be operated via the front panel, RS-232, optional infrared (IR) remote control, contact closure and IP Link®. With the DVS 304, IP Link also allows for direct communication with the Extron CrossPoint 450 Plus matrix switchers for quick interoperation and powerful system integration.

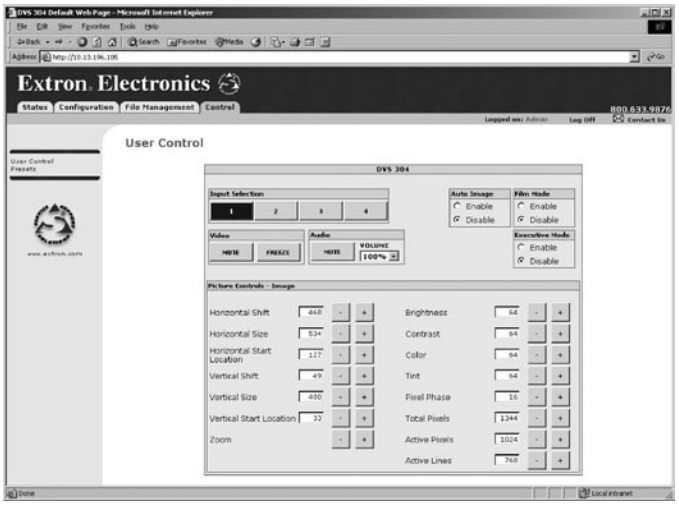
**Dual Scaled Outputs**
Two identical, scaled outputs are available on 15-pin HD and BNC connectors. A total of 59 output scan rates are available from VGA (640 x 480) to UXGA (1600 x 1200) resolution, as well as HDTV at 720p, 1080i, and 1080p.

**Audio Models Available**
The DVS 304 A and DVS 304 AD offer four input audio switching for stereo unbalanced or balanced sources. Independent gain and attenuation controls are available for each input, and all audio connections are on captive screw connectors for ease of integration. The output volume control eliminates the need for a separate audio preamplifier in many A/V systems.

**Integrator Friendly Features**
The DVS 304 is equipped with a comprehensive feature set for integrator friendly access and configuration, as well as user friendly operation. An on-screen display facilitates display of information pertaining to the selected input and adjustment of picture settings, including positioning, size, zoom, brightness, contrast, color, tint, and detail. Configurations can be conveniently saved and recalled from up to three memory presets per input. To enhance presentations, a special picture-in-picture (PIP) mode allows video and RGB sources to be combined within the same image.

**IP Link® Ethernet Control**
The DVS 304 is equipped with Extron's IP Link, an IP integration technology specifically engineered to meet the needs of professional A/V environments—from large universities and businesses to small residential installations. IP Link provides these advantages:

- **IP Link GlobalViewer™** – This free Web-based asset management application is specifically designed to work with products that include IP Link technology. GlobalViewer enables a variety of asset management functions including proactive maintenance, event scheduling, remote technical support, and theft alerts.
- **Global compatibility** – All IP Link products use industry standard Ethernet communication protocols, including ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP, and SMTP.
- **High performance architecture** – Web pages are served many times faster (6 Mbit/sec transfer rate) than similar products.
- **Multi-user support** – Multiple, simultaneous connections enable each IP Link device to support many concurrent users and improve system throughput by sending information in parallel.



## A/V System Integration using DVS 304 Scaler

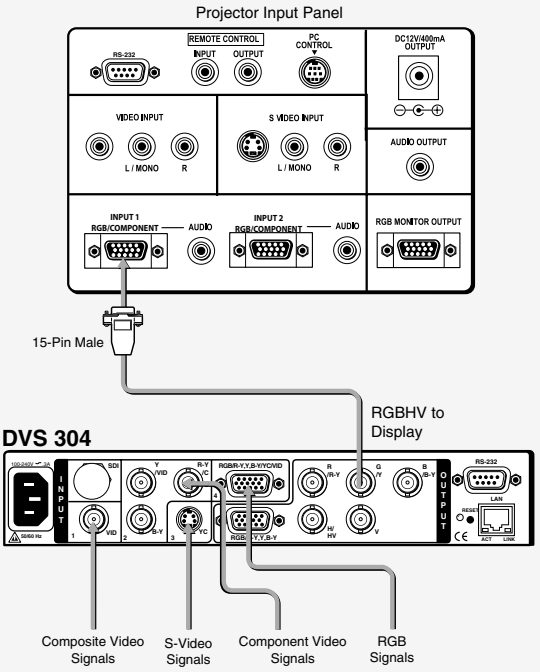
When using a scaler as the centerpiece of an A/V system, just a single RGBHV connection to the display is required. The cost benefits include reduced installation time, less cabling, and minimal system programming. The DVS 304 also offers high performance source switching superior to that of most flat-panel monitors and projectors.

### Single cable run to display

- **Lowers material cost** – Cost savings provided by single cable purchase versus individual video/RGB cables
- **Reduces installation time** – Less labor involved with pulling and bundling of cables
- **Less points of failure** – Minimizes likelihood of connector termination issues and damage related to installation and normal use
- **Smaller conduit size can be specified** – One cable requires less space than multiple cables

### Simplified operation and control

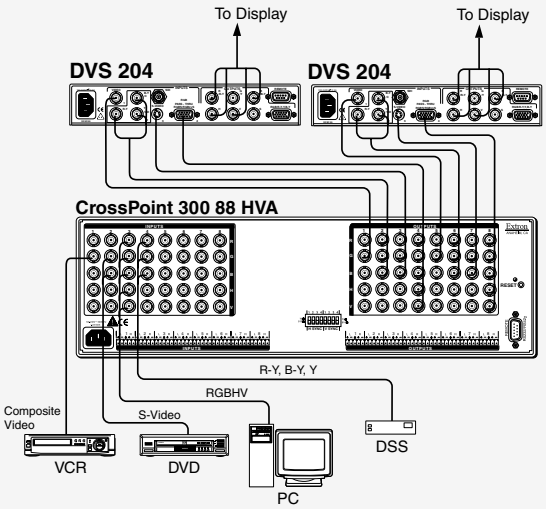
- **Speeds up input switching time** – Display source switching between formats takes time. The DVS 304 delivers just one common rate and resolution to the display, eliminating signal acquisition delay while streamlining presentations.
- **Minimizes system programming** – Consolidated switching allows for easy management of multiple signals in any system



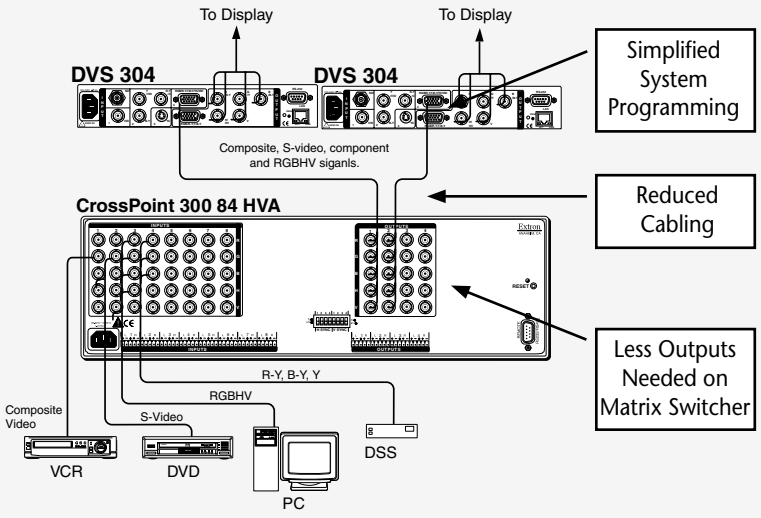

## Automatic Input Format Detection

Automatic Input Format Detection allows input four of the DVS 304 to accept and automatically detect any video format present. This provides the ability to deliver multiple signal types to the DVS 304 via a single cable using an external switcher, such as an Extron CrossPoint matrix switcher. The result is a streamlined system that provides significant cost savings, since fewer outputs are required on the matrix switcher.

**Traditional Scaler & Matrix Design**




**DVS 304 Scaler & Matrix Design**



# *FEATURES*

**Multi-Configurable Inputs**
The DVS 304 features four inputs, including a multi-configurable input for composite video, S-video, and component video. The fourth input is fully configurable and can accept any analog video format from composite video, to HDTV component video and RGBHV. Dedicated composite video and S-video inputs provide connectivity for today's most common video devices.

**RGB and Video Scaling**
RGB computer-video, high definition video, and standard definition video sources can all be scaled to the desired output resolution. A total of 59 output scan rates are available including computer-video rates up to UXGA (1600 x 1200), 480p, 576p, and HDTV rates at 720p, 1080i, and 1080p.

**RGB Upscaling and Downscaling**
The DVS 304 features an advanced scaling engine with high quality upscaling and downscaling of high resolution computer-video signals.

**Automatic Input Format Detection**
Input four of the DVS 304 can be set to detect the incoming signal format, automatically reconfiguring itself to provide the appropriate decoding and signal processing. This feature can reduce the number of required outputs for a matrix switcher, lowering system cost while improving manageability.

**Auto-Switching**
The DVS 304 can automatically switch between input sources. Additional inputs to the scaler can be achieved when the Auto-Switching mode is implemented on the DVS 304, placed on the back end of a larger presentation switcher, such as the MPS 112.

**Audio Switching and Output Volume Control**
The DVS 304 A and DVS 304 AD feature audio switching for four stereo balanced or unbalanced input sources. In addition to master volume control and muting, gain or attenuation can be adjusted for each input to eliminate noticeable differences when switching between sources.

**IP Link® Ethernet Monitoring and Control**
IP Link is a high performance intelligent network solution developed by Extron. IP Link also enables the DVS 304 to directly communicate with IP Link enabled matrix switchers for faster, streamlined system operation.

**Picture Controls**
Images can be adjusted and fine-tuned for brightness, contrast, color, tint, detail, and horizontal and vertical positioning, sizing, and zoom. Three memory presets are available for each input to store all image settings.

**Aspect Ratio Conversion**
Any video input can be adjusted horizontally and vertically to meet a specific aspect ratio requirement. Alternatively, the input aspect ratio may be specified (as 4:3 or 16:9) and fixed. For example, the user can save and recall specific settings to match various video aspect ratios from DVDs.

**Dual Outputs**
Scaled outputs are available as RGB or HDTV component video, through 15-pin HD and BNC connectors simultaneously.

**Picture-in-Picture**
A special picture-in-picture (PIP) mode, activated through the RS-232 or IP Link port, or IR remote control, allows a video source to be displayed within an RGB image, or vice versa. The PIP mode features adjustable window sizing and positioning.

**Auto-Image™ Setup**
For expedited presentation set-up, the DVS 304 automatically optimizes the image by analyzing and then adjusting to the incoming source, eliminating complex and time-consuming set-up procedures.

**On-Screen Display (OSD)**
The DVS 304 features an on-screen display which displays status information pertaining to the currently selected input, and facilitates easy adjustment of picture settings.

**RS-232 Control**
Through RS-232, the DVS 304 can be controlled and configured, or integrated into third-party control systems using Extron Simple Instruction Set (SIS™) commands.

**Optional SDI Input**
Available as a factory or add-on option is SDI (Serial Digital Interface) input. The SDI input enables CCIR 601 digital video sources to be integrated into A/V systems via the DVS 304.

**Rack-Mountable**
The DVS 304 is housed in a 1U, half rack width metal enclosure. The DVS 304 A is housed in a 1U, full rack width metal enclosure.

**Optional IR Remote Control**
The optional Extron IR 902 remote control allows for input source switching, image freeze control, and direct access to picture adjustments.

**IR 902 Remote (Optional)**

# SPECIFICATIONS

## VIDEO INPUT

| | |
|---|---|
| Number/signal type | 1 (RGBHV, RGBS, RGsB) pass-through, RGBHV, RGBS, RGsB, RGBcvS, component video, S-video, composite video<br>1 composite video, S-video, component video (Y, R-Y, B-Y)<br>1 S-video, 1 SDI (optional, DVS 304 D only)<br>1 composite video |
| Connectors | (1) 15-pin HD female RGBHV, RGBS, RGBcvS, component video, S-video, composite video<br>3 BNC female component video, S-video, composite video<br>1 BNC female: SDI (DVS 304 D, DVS 304 AD only)<br>(1) 4-pin mini DIN female: S-video<br>1 BNC female: composite video |
| Nominal level | 1 Vp-p for Y of component video and S-video, and for composite video<br>0.7 Vp-p for RGB and for R-Y and B-Y of component video<br>0.3 Vp-p for C of S-video |
| Minimum/maximum levels | Analog: 0.0 V to 1.0 Vp-p with no offset |
| Impedance | 75 ohms |
| Horizontal frequency | 15 kHz to 100 kHz |
| Vertical frequency | 50 Hz to 120 Hz |
| Resolution range | 640x480 to 1600x1200 including tri-level sync inputs for 480p, 720p, and 1080i |
| Return loss | <-30 dB @ 5 MHz |
| DC offset (max. allowable) | 1.5 V |

## VIDEO PROCESSING

| | |
|---|---|
| Decoder | 9 bit digital |
| Digital sampling | 24 bit, 8 bits per color; 13.5 MHz standard |
| Colors | 16.78 million |

## VIDEO OUTPUT

| | |
|---|---|
| Number/signal type | 2 scaled or pass-through RGBHV, RGBS, RGsB or scaled component video (Y, R-Y, B-Y) |
| Connectors | 5 female BNC<br>1 female 15-pin HD |
| Nominal level | 1 Vp-p for Y of component video<br>0.7 Vp-p for RGB and for R-Y and B-Y of component video |
| Minimum/maximum levels | 0.0 V to 0.7 Vp-p |
| Impedance | 75 ohms |
| Scaled resolutions | 640x480[1,2,3,4,5,6], 800x600[1,2,3,4,5,6], 852x480[1,2,3,4,5], 1024x768[1,2,3,4], 1024x852[1,2,3,4], 1024x1024[1,2,3], 1280x768[1,2,3,4], 1280x1024[1,2,3], 1360x765[1,2,3], 1365x768[1,2,3], 1365x1024[1,2], 1366x768[1,2,3], 1400x1050[1,2], 1600x1200[1,2], HDTV 480p[2], 576p[1,5], 720p[1,2], 1080i[1,2], and 1080p[1,2],<br>[1] = at 50 Hz, [2] = at 60 Hz,<br>[3] = at 72 Hz, [4] = at 96 Hz, [5] = 100 Hz,<br>[6] = 120 Hz |

## SYNC

| | |
|---|---|
| Input type | (RGBHV, RGBS, RGsB) pass-through, RGBHV, RGBS, RGsB, RGBcvS |
| Output type | RGBHV, RGBS, RGsB, and component video tri-level |
| Standards | NTSC 3.58, NTSC 4.43, PAL, SECAM |
| Input level | 0 V to 1.0 Vp-p |
| Output level | TTL: 5.0 Vp-p, unterminated |
| Input impedance | 75 ohms |
| Output impedance | 75 ohms |
| Max input voltage | 5 Vp-p |
| Max. propagation delay | 20 ns |
| Polarity | Positive or negative (swtich-selectable) |

## AUDIO — DVS 304 A, DVS 304 AD

| | |
|---|---|
| Gain | Unbalanced output: 0 dB;<br>balanced output: +6 dB |
| Frequency response | 20 Hz to 20 kHz, ±0.05 dB |
| THD + Noise | 0.03% @ 1 kHz at nominal level, 0 dB gain |
| S/N | >90 dB at maximum output (unweighted) |
| Crosstalk | <-80 dB @ 1 kHz, fully loaded |
| Stereo channel separation | >80 dB @ 1 kHz |
| CMRR | >75 dB @ 20 Hz to 20 kHz |

## AUDIO INPUT — DVS 304 A, DVS 304 AD

| | |
|---|---|
| Number/signal type | 4 stereo, balanced/unbalanced |
| Connectors | (4) 3.5 mm captive screw connector, 5 pole |
| Impedance | >50k ohms unbalanced, 25k ohms balanced, DC coupled |
| Nominal level | +4 dBu (1.23 Vrms), -10 dBV (316 mVrms) |
| Maximum level | +19.5 dBu, (balanced or unbalanced) at 1%THD+N |
| Input gain adjustment | –15 dB to +9 dB, adjustable per input |

**NOTE:** 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

## AUDIO OUTPUT — DVS 304 A, DVS 304 AD

| | |
|---|---|
| Number/signal type | 1 stereo, balanced/unbalanced |
| Connectors | (1) 3.5 mm captive screw connector, 5 pole |
| Impedance | 50 ohms unbalanced, 100 ohms balanced |
| Gain error | ±0.1 dB channel to channel |
| Maximum level (Hi-Z) | >+21 dBu, balanced or unbalanced at 1% THD+N |
| Maximum level (600 ohm) | >+15 dBm, balanced or unbalanced at 1% THD+N |
| Output volume range | 0 to 100 (-52 dB to 0 dB) in 0.5 dB increments from steps 4 to 100, 1 dB increment from step 0 to 3) |

## CONTROL/REMOTE — Decoder/Scaler

| | |
|---|---|
| Serial control port | RS-232, 9-pin female D connector |
| Baud rate and protocol | 9600 baud, 8 data bits, 1 stop bit, no parity |
| Serial control pin configurations | 1 = input 1 select, 2 = TX, 3 = RX, 4 = input 2 select, 5 = GND, 6 = input 3 select, 7 = input 4 select, 8 = n/a, 9 = hardwired IR |
| Ethernet control port | 1 RJ-45 female connector |
| Ethernet data rate | 10/100Base-T, half/full duplex with autodetect |
| Ethernet protocol | ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP, SMTP |
| Contact closure | 9-pin female D connector (same as RS-232 connector) |
| Contact closure pin configurations | See pins 1, 4, 5, 6, and 7 above |
| IR controller module | Extron IR 902 (optional) |
| Program control | Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer, Telnet |

## GENERAL

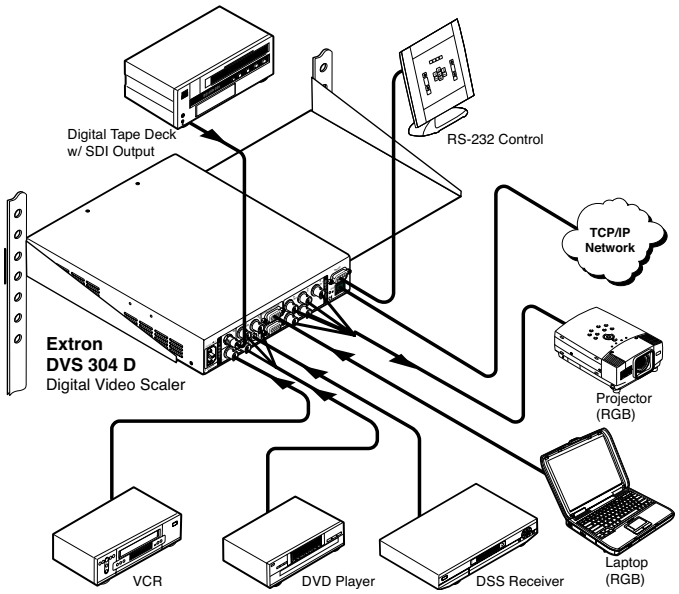
| | |
|---|---|
| Power | 100VAC to 240VAC, 50/60 Hz, 30 watts, internal, autoswitchable |
| Rack mount | |
| DVS 304, DVS 304 D | Yes, with optional 1U rack shelf, part #60-190-01 or 60-604-01 |
| DVS 304 A, DVS 304 AD | Yes, with included brackets |
| Enclosure type | Metal |
| Enclosure dimensions | |
| DVS 304, DVS 304 D | 1.75" H x 8.75" W x 10.5" D (1U high, half rack wide) 4.4 cm H x 22.2 cm W x 26.7 cm D (Depth excludes connectors and knobs.) |
| DVS 304 A, DVS 304 AD | 1.75" H x 17.5" W x 10.5" D (1U high, full rack wide) 4.4 cm H x 44.4 cm W x 26.7 cm D (Depth excludes connectors and knobs. Width excludes rack ears.) |
| Product weight | |
| DVS 304, DVS 304 D | 3.3 lbs (1.5 kg) |
| DVS 304 A | 6.5 lbs (2.9 kg) |
| DVS 304 AD | 6.8 lbs (3.1 kg) |
| Shipping weight | |
| DVS 304, DVS 304 D | 6 lbs (3 kg) |
| DVS 304 A, DVS 304 AD | 11 lbs (5 kg) |
| DIM weight (DVS 304 A, DVS 304 AD) | 12 lbs (6 kg) |
| Listings | UL, CUL |
| Compliances | CE, FCC Class A, VCCI, AS/NZS, ICES |
| MTBF | 30,000 hours |
| Warranty | 3 years parts and labor |

**NOTE:** All nominal levels are at ±10%.

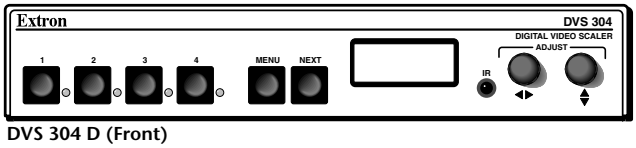
| Model | Version | Part Number |
|---|---|---|
| DVS 304 | Digital Video Scaler | 60-736-01 |
| DVS 304 D | Digital Video Scaler with SDI | 60-736-03 |
| DVS 304 A | Digital Video Scaler with Audio | 60-736-02 |
| DVS 304 AD | Digital Video Scaler with Audio and SDI | 60-736-04 |

**Specifications are subject to change without notice.**

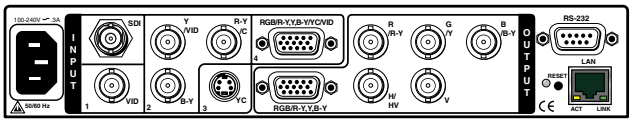
## *APPLICATION DRAWING*



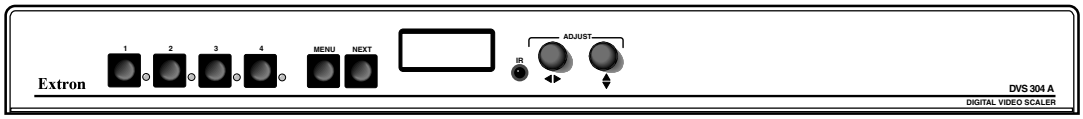

## *PANEL DRAWINGS*



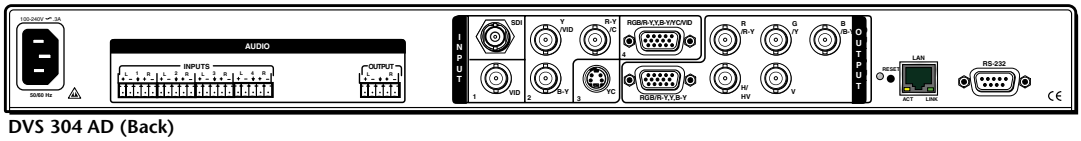

**DVS 304 D (Front)**




**DVS 304 D (Back)**




**DVS 304 AD (Front)**




**DVS 304 AD (Back)**

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